

COMPREHENSIVE WATER REPORT



April 1, 2015 City Council Meeting

Council Goal & Strategy

- **Goal**

The Morgan Hill Community will continue to be leaders in the state responding to the drought conditions and will support water rate increases to ensure system reliability.

- **Strategy**

By March 2015, the Council will receive a comprehensive report that identifies short and long term strategies to address the environmental and financial impacts of drought conditions which may include new rate structure, Proposition 218 water rate election, public investment in recycled water, and other measures as necessary.

Recommended Actions

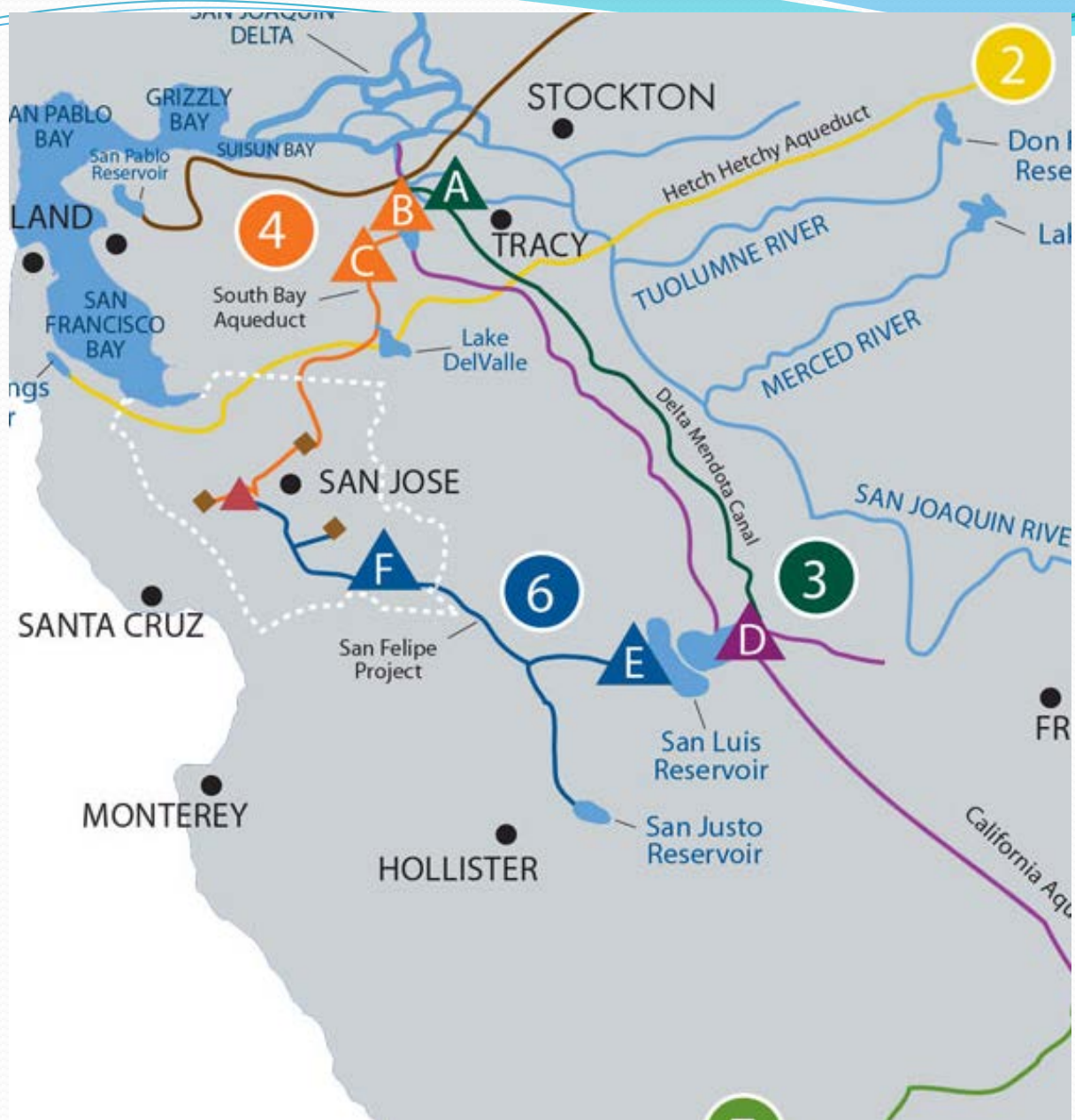
- Receive Report (Comprehensive Water Report)
- Provide Direction on Focus Areas for Future Workshop
- Set May 20, 2015 as Date for Water Workshop
- Adopt Resolution Declaring a Level 2 Water Supply Shortage

Outline

- City Water System and Sources
- Level of Service & Maintenance Standards
- Water Rate Structure
- Consumption and Conservation
- Drought Response & Level 2 Shortage Declaration
- Recycled Water
- Report Conclusions

Sources of City's Water

- 100% of Water Delivered from Groundwater
- Groundwater (Natural Recharge + Imported Water)
- Imported Water Travels Through Delta



Sources of City's Water

Regional Perspective

- Santa Clara County Now in “Extreme” Drought Severity
- Groundwater Levels 30 – 40 Feet Below Average
- Local Combined Reservoir Storage – 75% of Normal
- Despite Regional Reductions in Consumption, Net 80,000 AF of Water Taken Out of County Groundwater Reserves in 2014
- Total Groundwater Storage Predicted to Drop into Stage 4 (“Critical”) by end of 2015 if dry conditions continue
- Basin Recharge Efforts Significantly Curtailed
- District Board Calls for 30% Consumption Reduction

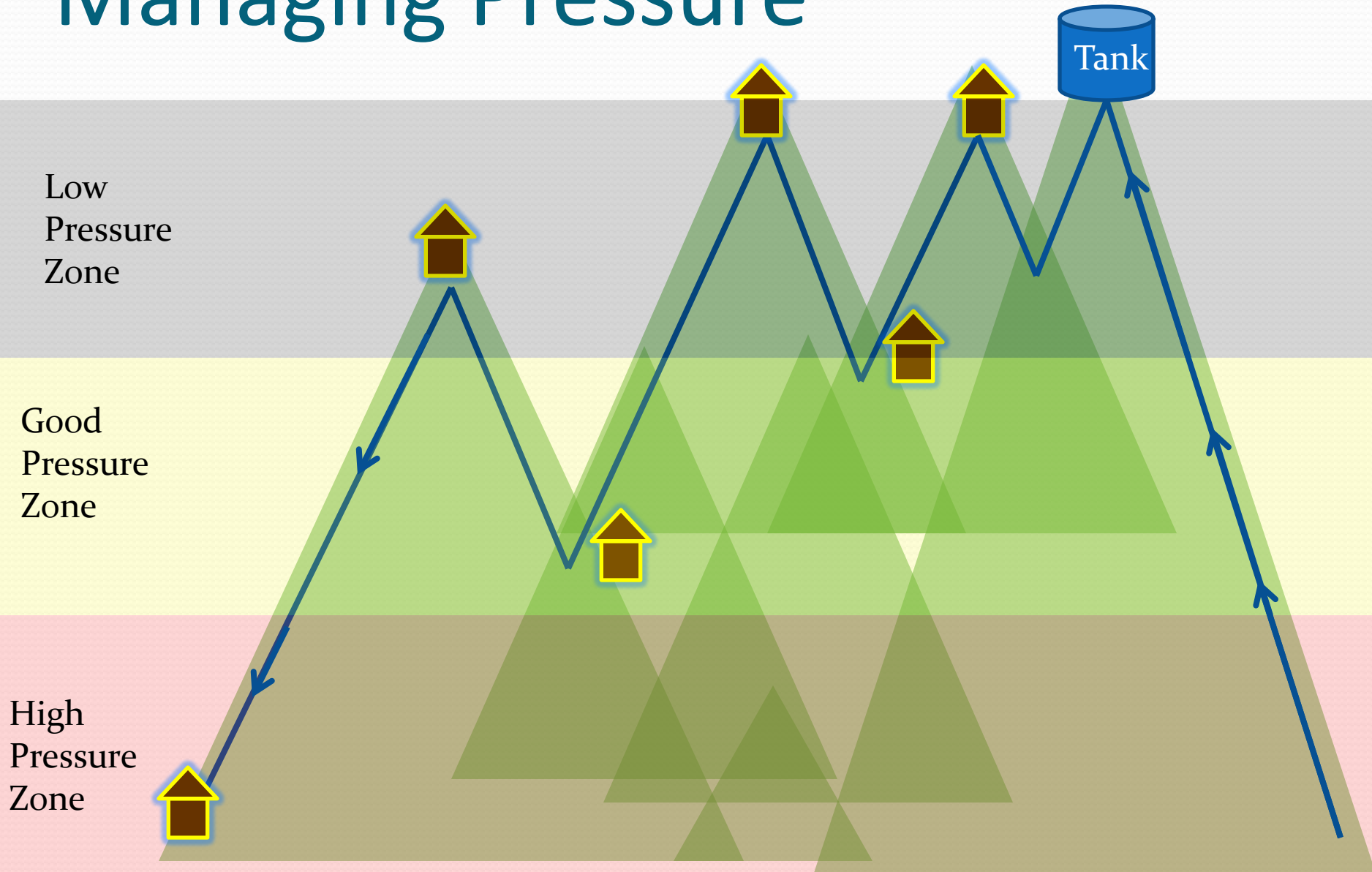
Water System

- Topography Effects on Water System
- Groundwater Wells

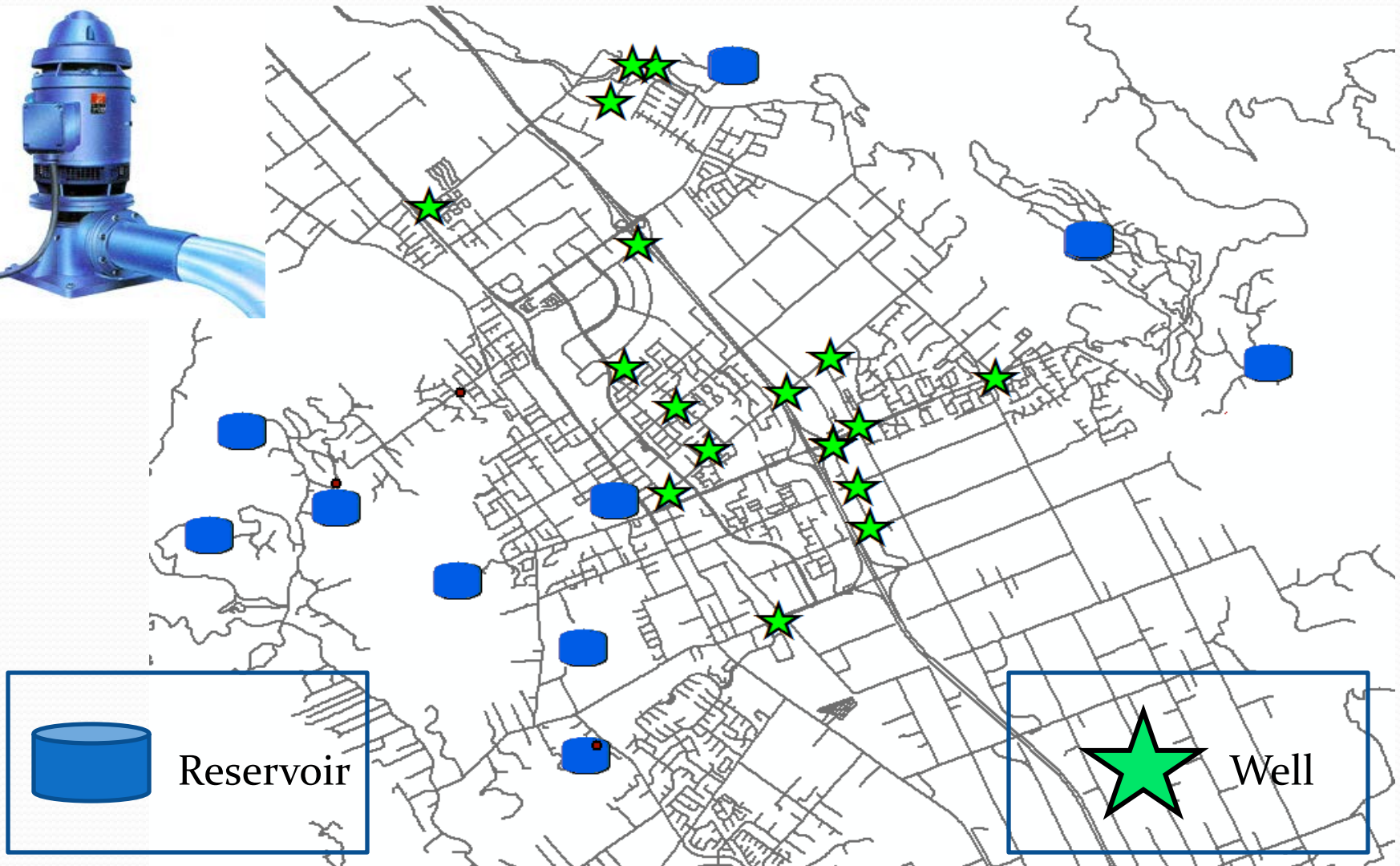
Water Distribution Network



Managing Pressure

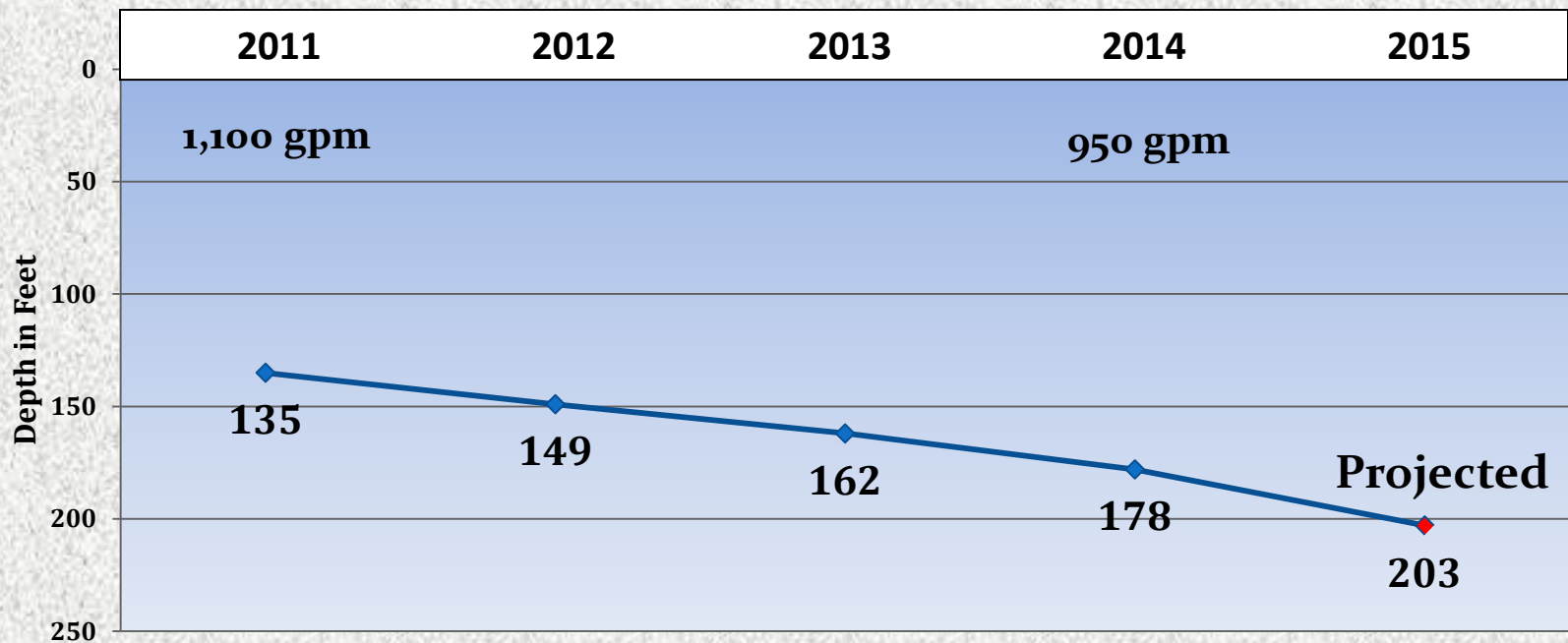


Wells and Reservoirs



Less Available Water

Nordstrom Well – July Water Levels



Level of Service & Standards

- Expectation for a High Level of System Reliability
- Preventive Maintenance is Key to Reliability
 - American Water Works
 - International Water Agency
 - Water Resource Foundation
 - International Electrotechnical Commission

Performance Measures

- 85 Electric Motors – Quarterly Maintenance
- 120 Specialty Valves – 3 Year to 5 Year Rebuild
- 6,346 Isolation Gate Valve – 5 Year Exercise Program
- 22 Emergency Generators – Monthly Inspection
- 1,927 Fire Hydrants – 3 Year to 5 Year Maintenance
- 12 Storage Reservoirs – Twice Weekly Inspection
- 45 System Control and Data Acquisition Stations

Leak Detection Technology

- City's Distribution System Leak Detection Program
- Helping our Customers
 - Meter Leak Detection



Informing our Community

Where our water comes from:



1 WELL, THAT'S A DEEP SUBJECT

All water in Morgan Hill comes from groundwater wells that feed an interconnected grid of pipelines to deliver water to homes and businesses. The wells go 450 feet deep to reach underground aquifers. These wells and pipelines provide millions of gallons of water each day. Water is disinfected at the source to remove bacteria and is regularly monitored.

PUMP IT UP

Powerful electric pumps bring the water up from the wells and into "booster" stations that increase the pressure in the waterlines to move water from the valley floor up into the hills and elevated parts of the city. All the pumps are monitored by a sophisticated motor control center and carefully maintained to ensure a steady supply of water at all times.

3 SAVING UP FOR A NON-RAIN-RAIN DAY

Morgan Hill's water system includes large storage tanks located throughout the city. They hold millions of gallons and are always kept at 50% capacity or higher for emergency fire protection. The water stored in the tanks is fed back into the system so that wells and pumps don't have to run during peak hours, thus helping the city save on energy cost.

4 A REAL PRESSURE SITUATION

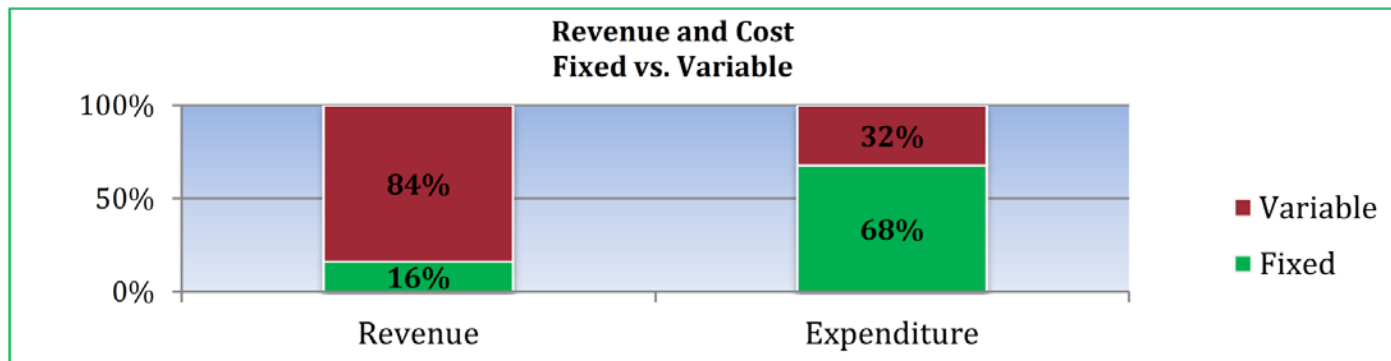
Underground pipes run in a complex grid throughout the city, connected by thousands of valves and pressures regulators. The water pressure in all these pipes must be monitored and carefully controlled. If the pressure gets too high, that can cause leaks and breakages. If the pressure drops too low, water can back flow into the system. Because of the many difference pressure zones, our knowledge and experienced crews are used to dealing with pressure they make sure the water keeps flowing at just the right rate.

WATER SYSTEM KEY FACTS:

No. of Water Wells	17	No. of Water "Booster" Stations	10
Depth of Wells	up to 530 ft	Capacity of Water Storage Tank	10 million gals
Production Capacity	15M gal/day	No. of Valves & Pressure Regulators	5,500
Miles of Water Pipeline	180	No. of Water Pressure Zones City-Wide	23
No. of Water Storage Tanks	12	No. of Emergency Back-up Generators	22

Water Rate Structure - Now

- Council Adopted Rates – Rate Increases
 - 2011 Bartle Wells Associates Rate Study
- Rate Assumptions
 - Water use per-capita, water sales, cost escalators
- How Water Rates Were Set – Fixed vs. Variable



Fixed and Variable Costs

	% of Total Cost
Fixed Cost:	
Personnel	23.8%
Supplies	10.8%
Capital (Meters, Machinery, Equipment)	7.3%
Debt Service	14.9%
Internal Services (Building, Fleet, IT, General Administration)	5.3%
Transfers Out (to General Fund, Environmental Programs, General Plan Update)	5.5%
Total Fixed Cost	67.6%
Variable Cost:	
Electricity	7.2%
Groundwater Production	24.9%
Supplies (11% of total)	0.3%
Total Variable Cost	32.4%
Total Cost	100.0%

Water Rate Structure - Future

- Moving Forward – Future Rate Consideration
 - Balance between environmental and financial sustainability
 - Examining fixed and variable revenues and expenditures
 - Higher percentage of fixed revenue
 - Larger fixed revenue source would ensure more stable cash-flow
- Further Rates Discussion at May 20th Water Workshop

City Response Plan

- City Response to Water Shortages Codified in Ordinance 1932 Adopted in 2009
- Establishes Permanent Water Waste Rules
- Establishes Operational Strategy for Water Shortages
- Operational Plan is Component of City's Urban Water Management Plan as Approved by the State
- City Declared Level 1 Water Shortage in 2014
- City Reduced Water Consumption by 20.5% Between March and December, 2014 (over 500 million gallons)

City Dept. Drought Responses

- Reducing the City's landscape irrigation dramatically
- Escalating the City's response to water leaks
- Eliminating the use of water in fire drills and training
- Washing fire engines only as necessary
- Evaluating all plumbing fixtures to ensure they are low flow and replacing fixtures as needed at all fire stations
- Modifying fire hydrant testing and maintenance to reduce water consumption
- Adjusting water system flushing schedules
- Reprogramming pool filtration equipment to eliminate unnecessary backwashing operations
- Increasing frequency of irrigation checks to reduce irrigation overspray and minimize water waste in the landscape

Permanent Water Waste Rules

- **Limits on Watering Hours**
- **Limit on Watering Duration**
- **No Excessive Water Flow or Runoff**
- **No Washing Down Hard or Paved Surfaces**
- **Obligation to Fix Leaks, Breaks or Malfunctions**
- **Recirculating Water Required for Water Fountains and Decorative Water Features**
- **Limits on Washing Vehicles**
- **Drinking Water Served Upon Request Only**
- **Commercial Lodging Establishments Must Provide Guests Option to Decline Daily Linen Services**
- **No Installation of Single Pass Cooling Systems**
- **No Installation of Nonrecirculating in Commercial Car Wash and Laundry Systems**
- **Restaurants Required to Use Water Conserving Dish Wash Spray Valves.**
- **Commercial Car Wash Systems**

Where We Were in 2014

Level One Supply Shortage

- **Limits on Watering Days.** Watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to a maximum of three days per week (M, W, F) during the months of April – October and one day per week from November – March.
- **Obligation to Fix Leaks, Breaks or Malfunctions.** All leaks, breaks, or other malfunctions in the water user's plumbing or distribution system must be repaired within 72 hours of notification by the city unless other arrangements are made with the city.
- **No Washing Down Hard or Paved Surfaces.** Washing down hard or paved surfaces is prohibited except when necessary to alleviate safety or sanitary hazards

Recommendation for 2015

Level Two Supply Shortage

- **All Level 1 and Permanent Rules Remain in Place**
- **Limits on Watering Days.** Watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to a maximum of two days per week during the months of April – October and one day per week from November – March.
- **Obligation to Fix Leaks, Breaks or Malfunctions.** All leaks, breaks, or other malfunctions in the water user's plumbing or distribution system must be repaired within 48 hours of notification by the city unless other arrangements are made with the city.
- **Vehicle Washing.** Washing of cars prohibited except at commercial facilities recycling water
- **Pool and Pond Filling.** Filling of residential pools prohibited. Filling of ornamental lakes and ponds prohibited except as needed to maintain aquatic life

Communication/Engagement/ Enforcement

- Inform Customers Using Wide Variety of Methods (bill insert, electronic messaging, posters, etc.)
- Educate During Initial Enforcement Actions (Light Touch)
- Solicit Educational Partners
- Engagement Via WaterSmart
- Visit Enforcement Approach During May 20th Workshop

Recycled Water

- Purple pipe



- Recycled water from wastewater treatment plant
- Typical uses are irrigation, industrial and agricultural

Bringing Recycled Water to Morgan Hill

- Current Options to Consider
 - Pipeline from treatment plant source
 - Scalping Plant in Morgan Hill
- Cost
 - Construction
 - Maintenance
 - Regulatory

Recycled Water Studies

- 2015 Update to 2004 Recycled Water Master Plan
 - Currently underway – SCVWD and SCRWA
 - Will identify potential new customers
 - Update demand projections
 - Develop and evaluate alternatives
 - Evaluate options for Morgan Hill
- 2015 Morgan Hill Recycled Water Master Plan
 - Focused on development of Morgan Hill's options
 - Report due late summer 2015



Report Conclusions

- Moving forward, the cost of producing water will be greater than anticipated in the 2011 Rate Study.
- Morgan Hill community's water stewardship has significantly reduced consumption.
- City's current rate structure does not adequately balance short term and long term financial/environmental sustainability.

Report Conclusions - Continued

- Reducing water consumption by 30% will be required in 2015.
- New comprehensive water rate study should commence immediately.
- Investment in water recycling should be evaluated as a secondary source of water.

Recommended Actions

- Receive Report (Comprehensive Water Report)
- Provide Direction on Focus Areas for Future Workshop
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